R645-301-300 BIOLOGY SECTION

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R645-301-300 BIOLOGY

R645-301-310. BIOLOGY INTRODUCTION

The following vegetative, fish, and wildlife resource information has been taken from the Data Adequacy document (Data Adequacy L.B.A No. 11, December 1996) and the Environmental Assessment (Mill Fork Federal Coal Lease Tract UTU-71307, Environmental Assessement document, Lease By Application, No. 11) reported by the Manti LaSal National Forest in June, 1997.

R645-301-320. ENVIRONMENTAL DESCRIPTIONS

R645-301-321. VEGETATION INFORMATION

The Mill Fork area contains very steep and narrow east-west trending canyons with rounded narrow ridge tops. Contour elevations range from approximately 8100 feet to over 10,700 feet. Vegetative cover and species composition within this elevation range are very diversified. Ecosystems within this portion of East Mountain contain various habitats that are mostly influenced by the steep and broken slopes and their orientations. Distinguishable ecosystems within the area are grasslands, perennial forb lands, sagebrush lands, mountain brush lands, coniferous forest lands, aspen forest lands, and pinyon/juniper woodlands. Refer to Map MFS1821D in the Maps Section for the diverse vegetative communities.

Grasslands - These lands make up only a small portion of the Mill Fork Lease Area. Grasslands include both perennial and desert grasses at high and low elevations. Salina wild rye grass is the dominant grass at the lower elevations and Letterman needle grass

dominates the high elevation ridge top sites. They are predominately found on slopes with a south to southwestern exposure**.**

Perennial Forb Lands - Perennial forbs exist mainly on or near ridge tops. Common species found include sages, vetches, and clovers. These forbs are important food source for deer and elk populations as well as cattle and sheep.

Sagebrush Lands - This vegetative type is found on most of the steep south slopes and high elevation ridge tops. Less than 10% of the Mill Fork area occur in this type. Grasses are interspersed within this community. Salina wild rye grass is the dominant grass at the lower elevations and Letterman needle grass dominates the high elevation ridge top sites. Few forbs are present in this type. The sagebrush species common in this vegetative type are black sagebrush and big mountain.

Mountain Brush Lands - Mountain brush vegetative types occur mostly on the mid-elevation south slopes, high elevation ridges and in the upper basins within the Mill Fork area. This type is present on about 15% of the area. The lower elevation sites are heavily used by wintering elk and deer and the higher elevation ridges and basins are used by sheep during the summer. Most of the vegetative types is classed as unsuitable for use by livestock, because of steep inaccessible slopes.

Coniferous Forest Lands - It is estimated that about half the Mill Fork area is covered with conifer timber vegetative type. These types are mostly found on the northerly exposed slopes of the canyon. Douglas fir make up about 85% of the conifer cover with alpine fir and spruce trees present only at the higher elevation ridge and in the upper basin. The dense forest growth on the steep canyon slopes provide a good scenic view, a

good watershed cover and wildlife habitat. Understory vegetation in this ecosystem is generally poorly developed due to shading.

Aspen Forest Lands - Aspen type occur on an estimated 20-25% of the Mill Fork area. They occur mostly on mid and higher elevation sites and on the lower canyon slopes. Most of the aspen types with the area are in either early or mid-seral condition. Only a few stands at high elevation and some isolated sites are in late seral condition. Stands of aspen mostly at higher elevations are being invaded by Douglas fir trees. The aspen ecosystem provide a very important habitat component for many wildlife species, both animal and birds. It also has a high value for livestock grazing and watershed values.

Pinyon-juniper ecosystems - These areas are dominated by pinyon pine and juniper. This ecosystem occurs only in the submontane ecological association. A diverse vegetative understory community is often lacking over wide expanses of the ecosystem. Thus, irregular shaped, but sometimes extensively sized openings have been created in the pinyon-juniper ecosystem for conversion to more productive sagebrush-grass, mountain brush or grassland settings.

Threatened, Endangered and Sensitive Plant Species

Threatened, endangered, and sensitive plant species of interest include *Astragalus monti, Hedysarum occidentale var. canone, Silene petersonii, and Aquilegia flavescens*. Populations of these species have been found to inhabit areas near the Mill Fork Lease area. The information discussed on the above listed species was provided by the Manti-LaSal Nationl Forest and gained through personal interviews with Mr. Bob Thompson, Botanist, Manti-LaSal National Forest. The species are discussed below.

Astragalus montii - Monti's milkvetch

This plant is found at high elevations (10,000 to 11,000 feet) on the Flagstaff limestone outcrops. Populations are located on top of Heliotrope, Ferron and White mountains (Ferron Ranger District). This plant is associated with low growing sub-alpine vegetation.

Hedysarum occidentale - Canyon Sweetvetch

Scattered populations of this plant occur in Lower Huntington Canyon, Straight Canyon, and near Joes Valley, Ferron District (5,500 to 7,000 feet). Plants are usually found on sites with a high water table, near springs or along stream beds, and along riparian sites within the Pinyon Juniper ecosystems. River birch and Squawbush are plants most commonly associated with this species.

Silene petersonii- Peterson catchfly

Scattered populations have been found mostly on Flagstaff limestone outcrops on higher elevation ridges and snowdrifts. Occurrences have been found from the Wagon Road Ridge, south to the top of White Mountain. This plant is part of the sub-alpine low forb plant community.

Aquilegia flavescens - Link trail columbine

This plant occurs in springs, seeps and perennial wet sites. Populations have been found in Link Canyon, Box Canyon, Muddy Creek drainage, Straight Canyon and Joes Valley.

Erigeron carringtoniae - Carrington daisy

"...Endemic at high elevations on the Wasatch Plateau (Emery, Sampete, and Sevier cos.), *E. carringtoniae* grows on flat to gently sloping plateau margins and

adjoining steep, eroding slopes, predominantly on the white Flagstaff Limestone (Stone, 1993a). Soils are generally quite shallow with little or no profile development, and consist of gravelly calcareous clays or clay loams overlain by a thin layer of loose, angular limestone fragments or gravel. Ten occurrences of *E. carringtoniae* are currently known (including two with > 1000 plants as recorded by B. Thompson in 1991)..." (Inventory of Sensitive Species and Ecosystems in Utah, Utah Division of Wildlife Resources, 1998). Occurrence has been confirmed by Mr. Bob Thompson (personal interview) in the southern end of the lease, however, in his opinion, there should be no impacts to this species due to subsidence.

Listed rare and other high interest plant species have been found to occur near the Mill Fork Lease area. The species are *Chrysothamnus nauseocus var. psilocarpus, Gentiana prostrata, Gentianopsis barbellata, Ligusticum porteri.* Mr. Bob Thompson indicated during a personal interview that no threatened, endangered or sensitive plant species have been found to occur within the Mill Fork Lease area. He believes that the four high interest species do not occur within the lease, however, no surveys have been conducted to verify their existence or absence. It was also Mr. Thompson's opinion that impacts to vegetation due to mining induced subsidence will be negligable to vegetation within the Mill Fork Lease.

R645-301-322. FISH AND WILDLIFE INFORMATION

The Mill Fork area consists of portions of Crandall Creek, Mill Fork and Rilda canyons to the east and unnamed canyons to the west. Runoff from the area contributes to Crandall Creek, Little Bear Creek, Mill Fork, and the Right Fork of Rilda Creek ; all are tributaries to Huntington Creek. The western side of the Mill Fork area consists of tributaries to Indian Creek. The

southern portion contributes runoff to a small portion of the Cottonwood Creek. Crandall Creek and Indian Creek are the only tributaries considered perennial, all other tributaries are intermittent/ephermal. Continuous flows usually occur in spring and early summer as snowmelt. During late summer and fall, isolated thunderstorms are typical in the region.

Surface and ground water sources is provided for an abundance of fish and wildlife species in the Mill Fork area. Perennial streams support naturally-reproducing trout fisheries and aquatic communities typical to mountain environments. Water resources provides habitat for a variety of big and small game animals, non-game animals and birds. A complete listing of all theatened and endangered fish and wildlife species that have the potential to be present near and/or within the Mill Fork lease can be found in the County lists of Utah's Federally Listed Species (UDWR, 8/14/02, at http://www.utahcdc.usu.edu/ucdc/.) A complete listing of all sensitive fish and wildlife species that have the potential to be present near and/or within the Mill Fork lease can be found at this same internet address. Some important species are discussed below.

I. Aquatic Species - The Utah Division of Wildlife Resources (UT DWR) has conducted game fish surveys of the perennial and intermittent streams in the Mill Fork area. Their reports show a variety of salmonid species in each of the streams; Crandall Creek, Little Bear Creek, Mill Fork Creek, Right Fork Rilda Creek, and Indian Creek. The following summarizes each stream with each representative game species.

- Crandall Creek — Colorado Cutthroat *(Oncorhynchus clarki pleuriticus)*; Rainbow Trout *(Salmo gairdneri)*; Yellowstone Cutthroat *(Oncorhynchus clarki)*
- Little Bear Creek — Yellowstone Cutthroat *(Oncorhynchus clarki)*; Rainbow Trout *(Salmo gairdneri)*

- Mill Fork Creek — Yellowstone Cutthroat *(Oncorhynchus clarki)*; Rainbow Trout *(Salmo gairdneri)*
- Right Fork Rilda Ck. — Yellowstone Cutthroat *(Oncorhynchus clarki)*; Rainbow Trout *(Salmo gairdneri)*
- Indian Creek — Brook Trout

In addition to the species listed above, the drainages are also likely to support populations of the following non-game species; speckled dace *(Rhinichthys osculus)*, mottles sculpin *(Cottus bairdi),* bluehead suckers *(Pantostius delphinus),* and mountain suckers *(Catostomus platyrhynchus)* (Chistopherson, UT DWR).

Benthic Invertebrates - The USGS in cooperation with the Utah DNR and Utah DOGM conducted a comprehensive hydrologic study (from July 1977 through September 1980) of the upper drainages of the Huntington and Cottonwood creeks. Data on benthic invertebrates were collected from 16 sites in October 1977, July and October 1978, and October 1979. This data will be cited and used as a baseline evaluation for the Mill Fork Tract. Refer to United States Geological Survey, Water-Resource Investigations, Open-File Report 81-539, Salt Lake City, Utah, 1981.

As written from the report, "...data indicate that there were significant seasonal differences in the benthic invertebrate population at a given site in addition to areal differences...These organisms appeared in their maximum numbers in the July samples collected at sites in the higher altitudes of the study area, but they were not present in any of the October samples. The large numbers found in July, reflected a seasonal cycle rather than an unnatural condition that allowed one species to dominate." The average diversity (Shannon-Weiner diversity index) found between 1977 and 1979 in Crandall and Mill

Fork canyons was 2.38 and 2.09, respectively. During hydrologic baseline data collection (2000-2002), the '77 through '79 study area in Mill Fork Canyon was dry.

II. Terrestrial Species - The Mill Fork and surrounding area contains habitat for a variety of wildlife including a potential of 84 mammals, 140 birds, and 25 reptiles and amphibians (Mill Fork Federal Coal Lease Tract UTU-71307, Environmental Assessment, LBA Application #11. June, 1997).

Mule deer *(Odocoilius hemionus)* and elk *(Cervus elaphus)* are common in the area. These species typically occupy the higher elevations for summer ranges from May through late October. These areas are important for grazing/browsing before the onsets of winter. Lower elevations are occupied for winter range habitat. Deer and elk summer and high value winter range areas are outlined on maps MFS1849B and MFS1822B in the Maps Section. Population trends of both deer and elk can be found on the DWR website (http://www.wildlife.utah.gov/hunting/biggame.html). This information can be reviewed for the Manti region by opening the appropriate .pdf file under Big Game Reports.

A number of raptors occupy the Mill Fork area. These species include the Golden eagle *(Aquila chrysaetos)*, Goshawk (*Accipiter gentillis)*, Red-tailed Hawk *(Buteo jamaicensis)*, Sharp-shinned Hawk *(A. striatus),* American kestrel *(Falco sparverius)*, and Great Horned Owl *(Bubo virginiana)* (Mill Fork Federal Coal Lease Tract UTU-71307, Environmental Assessment, LBA Application #11. June, 1997). These species have been seen in the area in the spring and summer months. Nesting areas have been located along the high cliff areas and the aspen-conifer habitats during the Raptor reconnaissance survey conducted in May, 2001. These surveys are conducted annually using helicopter transport and with Division of Wildlife Resources personnel as well as company representatives. Map MFS1852B located in the Confidential and Private Volume (Deer

Creek tab: Deer Creek Mine :Volume 12 R645-301-300 Biology) ~~in the Maps Section~~ illustrates each located nest in and near the Mill Fork permit area.

Three Golden eagle nest sites were identified during the 2002 Raptor reconnaissance survey within the Mill Fork Lease (refer to Map MFS1852B, located in the Confidential and Private Volume [Deer Creek tab: Deer Creek Mine :Volume 12 R645-301-300 Biology]). All of the nests are located in the northeastern portion of the lease. Based on the September 2005 mine layout, none of the nests are within the projected subsidence affected area (refer to maps MFS1866D in the Engineering Section and MFS1839D located in the Confidential and Private Volume [Deer Creek tab: Deer Creek Mine :Volume 12 R645-301-500 Engineering]).

R645-301-322.210. Threatened and Endangered Species

The referenced Environmental Assessment reports "No threatened or endangered wildlife species are known to inhabit the proposed lease area. A Bald Eagle (*Haliaeetus leucocephalus)* nest near the Hunter Power Plant is approximately 26 miles southeast of the coal lease. The coal lease area is outside of the foraging area for the Bald Eagles. Two peregrine falcons (*Falco peregrinus*) were observed approximately 13 miles north in 1996. The falcons were observed during nesting season but no nest site was ever confirmed. It is generally accepted that peregrine falcons will forage up to 15 miles from their eyrie, however given the prey base available it is doubtful that the falcons would forage over the coal lease area. No roost sites have been found in the lease area ..."

Mexican Spotted Owls (MSO) have recently become a species of interest since the U.S. Fish and Wildlife Service (USFWS) designated (in January, 2001) 4.6 million acres on federal lands in Arizona, Colorado, New Mexico, and Utah as critical habitat. The designation includes 3.2 million acres in Utah. More specifically, the designation includes areas west of the Colorado

River within the West Tavaputs Plateau in Carbon County and the northeast corner of Emery County east of US Highway 6. Other areas in Utah have been designated as critical habitat, however, these areas exist in the southern portion of the state. Typical MSO, habitat according to the 2001 Environment Assessment, consists of "a diverse array of biotic communities. Nesting habitat is typically in areas with a complex forest structure or rocky canyons, and contains uneven-aged, multi-storied mature or old growth stands that have high canopy closure (Ganey and Balda 1989, USDI 1991). In the northern portion of the range (southern Utah and Colorado), most nests are in caves or on cliff ledges in steep-walled canyons....typically characterized by the cooler conditions...frequently contain small clumps or stringers of ponderosa pine, Douglas fir, white fir, and/or pinion-juniper".

Dr. Dave Willey from Montana State University, known MSO expert, modeled representative habitat using the 2000 Willey-Spotskey Mexican Spotted Owl Habitat Model. The model included all areas of the Mill Fork Lease Tract. Figure 1 shows the lease boundary and surrounding area. Areas identified in black, are areas of potential nesting habitat. The greens are identified as potential foraging areas of steep sloped mixed conifers. However, it is reported in the DWR's *Inventory of Sensitive Species and Ecosystems in Utah, 1997* that foraging, nesting and roosting habitats are "dominated by Douglas-fir and/or white fir...In the northern portion of the range (southern Utah and Colorado), most nests are in caves or on cliff ledges in steep-walled canyons." Potential steep sloped, mixed conifer foraging habitats of this type are found on the extreme northeastern border, extreme western border, and a small area in the southwest corner of the lease area as illustrated in Figure 1. Large ponderosa pines are typically found in lower elevations in the rocky canyons to the east of the lease tract. The west side of the tract supports both aspen and Douglas fir stands, however, this area lacks cliff ledges or steep walled canyons recognized as typical nesting habitats. Figure 2 shows the only area on the lease that supports potential MSO habitat subsidence. There are no potential MSO habitat within the lease that could be impacted by subsidence.

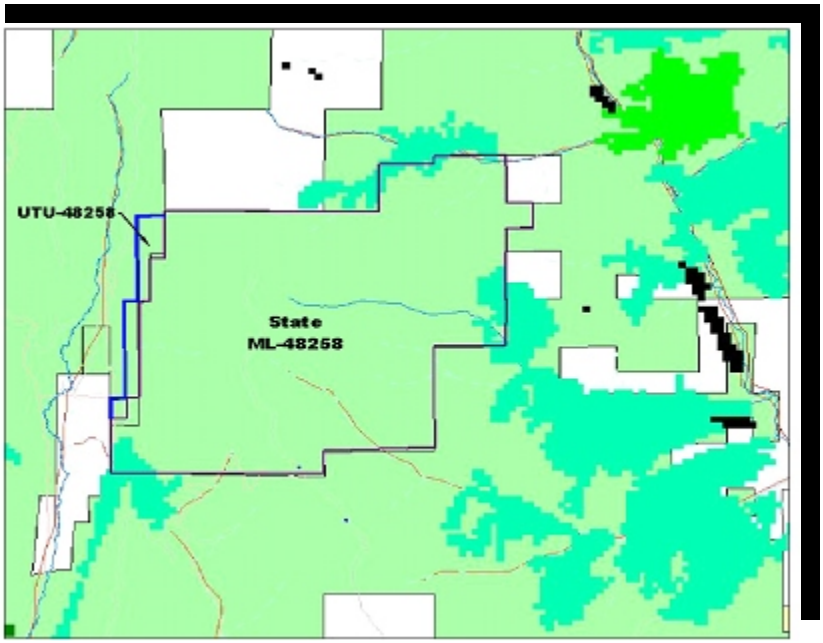

Figure 1: Mexican Spotted Owl nesting and foraging areas (Dr. Dave Willey, Montana State University, 2000)

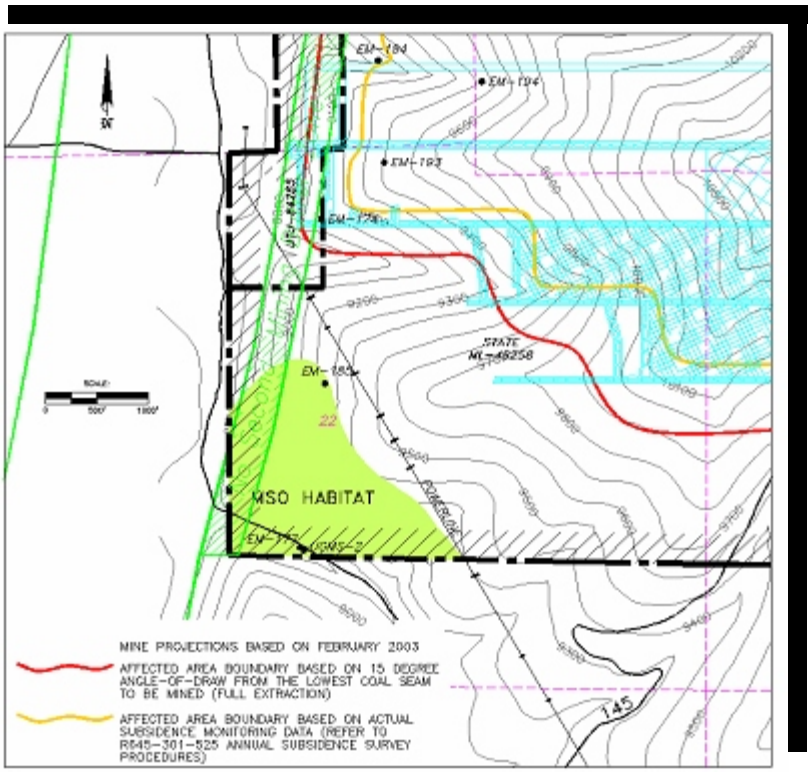

Figure 2: Southwest corner of Mill Fork State Lease. The green shading is steep slope mixed conifer habitat (Douglas fir/white fir). Light blue lines indicate location of proposed mining.

No sightings of the Mexican Spotted Owl have been made on the Mill Fork Lease Area (personal communication with Rod Player, USFS - Price District). Areas west of the San Rafael have been surveyed two years in a row and no owls were found (Mexican Spotted Owl Training Class, Lora Romin, Frank Howell - DWR Instructor, March 21, 2002, Moab, Utah). It is PacifiCorp's opinion that with the facts given, mining will have no effect on the Mexican Spotted Owl if they occur in the lease area.

R645-301-322.230. Sensitive Species

The Colorado river cutthoat is thought to be present in the Crandall Creek drainage. Genetic testing is on-going to confirm if these fish are pure-strain Colorado cutthroats, however, no definitive data is currently available.

The Spotted Bat *(Euderma maculatum)* depends on cliffs for roost/hibernation areas. These areas exist in isolated locations in the eastern portion of the Mill Fork permit area. Energy West Mining Company and Genwal Resources in 1997, contracted Richard Sherwin, Dr. Duke Rogers, and Carl Johansson to conduct a bat survey in the areas of Huntington Canyon, Straight Canyon, and Cottonwood Canyon. The purpose of this survey was to assess the distribution, abundance, and habitat requirements of the Townsand big-eared and Spotted Bats. These parameters were investigated for the following: 1) areas under consideration as potential lease sites for mining (North Rilda Area, Cottonwood Canyon LBA and the Mill Fork lease); 2) sites where subsurface coal mining is onging, and 3) sites (both on and off the Manti-La Sal National Forest) that serve as controls (no mining activties). The results of this survey (Refer to the Appendix A: *Assessment of Spotted Bat (Euderma maculatum) and Towsend's Big-eared Bat (Corynorhinus townsendii) in the Proposed Cottonwood Canyon, North Rilda Area and Mill Fork Lease areas, Manti La Sal National Forest, Emery County, Utah.)* are as follows:

Use assessment for Townsend's big-eared bats in specified areas

No Townsend's Big Bats were located within the survey areas during the project.

Use assessment for Spotted bats in specified areas

No Spotted Bats were mist netted during these studies, refer to Appendix A Table 1 for a summary of results. There is some indication that water source(s) may not be as critical for the Spotted bat as for other species of bats with which it co-occurs. In a study of urine concentrating ability among selected species of bats, the Spotted Bat could concentrate its urine more effectively than any species of bats evaluated, with the exception of two typically "desert species", the Pallid Bat (Antrozous pallidus) and the Western pipistrelle (Pipistrellus hesperus - Geluso, 1978). It is likely that the Spotted bats were using water sites specifically to forage rather than drink, making netting extremely difficult.

Spotted Bats were observed throughout the eastern (lower elevation) portions of the study areas. The highest concentration of calls were recorded in Rilda and Huntington Canyons. These canyons seem to best represent "classic" Spotted Bat habitat with an abundance of fractured sandstone cliffs, and large areas of suitable foraging habitat.

From three studies, it appears that Spotted Bats are using the cliffs as roosting areas and the canyons as flyways to reach the lower elevation foraging areas. The principal Spotted bat foraging areas are located over the lower elevation riparian habitat located near the mouth of Huntington Canyon. Spotted bats concentrated foraging efforts above the upper canopy of intact riparian vegetation, particularly cottonwood trees (Populus ssp.).

Spotted Bats were not restricted to the study areas, but rather are widely distributed in low densities throughout the entire area. In fact, Spotted Bats were detected in suitable habitat throughout the area (including utilizing the parking lots of the Village Inn Motels in Huntington and Castle Dale).

There also is evidence that the Spotted Bats tolerate at least moderate human disturbance while foraging. Surveys were conducted at several sites near roads with light to moderate vehicular traffic (Crandall Canyon, Huntington Canyon), including tandem trucks used for hauling coal from the Genwal Mine portal located in Crandall Canyon. Spotted Bats were observed foraging at low elevations sites off the lease areas, sometimes within 30 meters of the right of way.

Spotted Bats are common throughout the Huntington Canyon area. They were identified utilizing the lease areas (North Rilda and Mill Fork), the active mine permit areas and the control sites (refer to Appendix A, Table 2). Based on the number of individuals observed and their habitat use patterns, it does not appear that current mining practices represent a long term threat to the viability of this population. The bat communities in all areas sampled consist of the same suit of species among all areas of similar habitat and complexity (this includes sites in actively mined areas, control sites, and proposed lease areas (North Rilda and Mill Fork).

The fact that Spotted Bats are relatively common in active and previously mined areas implies that past cliff failures have not dramatically impacted resident populations. As a cliff roosting species, it is likely that they have adapted to tolerate natural rock falls and subsidence. Mine related cliff failures do not generally result in a net loss of habitat (ie. cliffs), but rather provide replacement habitat which may later be colonized by members of the local population. The results of the study indicate that Spotted Bats are "common" enough throughout the area that the localized failure of cliffs (as a result of coal mining within the proposed lease areas [North Rilda Area and Mill Fork]) does not pose a serious threat to the population as a whole.

R645-301-323. MAPS AND AERIAL PHOTOGRAPHS

Maps for vegetation diversity, deer and elk habitat, and raptor nest locations are included in the Maps Section of R645-301-300. Biology. The reader should review these maps to locate these environmental resource items of interest. In addition to biologic base maps provided in this

section, PacifiCorp conducts annual reconnaissance surveys, including subsidence monitoring (annual aerial photogrammetric surveys), infra-red photography (5 year intervals), and hydrologic monitoring.

R645-301-330. OPERATION PLAN

All mining activities associated with the Mill Fork permit area will be through underground mining operations. Mine plan layouts (Hiawatha Seam) depicted in R645-301-500 Engineering Section, indicate potential portal breakouts located in Crandall Canyon, (Section 5, Township 16 South Range 7th East SLB&M), within a 2.41 acre right-of-way easement acquired from Andalex Resources/Intermountain Power Agency . The location of the portal breakouts are considered preliminary at this point and will be evaluated and designed based upon future surface coal exploration programs and mine plan considerations. Prior to any surface disturbance, Energy West will secure all necessary permits.

R645-301-332. ANTICIPATED IMPACTS DUE TO SUBSIDENCE

Multiple surveys have been conducted on the portion of the surface of East Mountain that could possibly be affected by the full extraction or second mining of coal from the Mill Fork Permit area. It has already been determined that there are renewable resources present in the area in the forms of springs, water seeps, grazing land, timber, and wildlife. Also present in the permit area are unimproved roads, trails, a gas well and pipelines, power transmission lines, and some portions of the Castlegate Sandstone escarpment (see Pre-Subsidence Survey Map MFS1839D located in the Confidential and Private Volume [Deer Creek tab: Deer Creek Mine :Volume 12 R645-301-500 Engineering]).

Known springs and seeps that are located within the Mill Fork Lease second mining areas are shown on the Pre-Subsidence Survey Map. The Hydrologic Section of the Mill Fork MRP, Appendix A, contain a listing of sampling sites and a monitoring schedule. Most of the streams within the permit area are ephemeral and/or intermittent. The Crandall Canyon Creek and the lower portion of Rilda Canyon Creek is considered perennial. The streams that flow into Mill Fork Canyon are fed by springs that emanate primarily from the North Horn Formation within the permit boundary. Portions of the headwaters of the drainage basins that feed Crandall and Rilda canyons are within the Mill Fork Lease. Second mining, i.e. longwall extraction or room & pillar mining, of the Mill Fork area will not occur beneath the main stream channels of these canyons. First mining development of access mains from Deer Creek Mine to the Mill Fork Lease will occur to the north of the Right Fork of Rilda Canyon.

The entire permit surface area is utilized for grazing of sheep and cattle during the summer season. Experience from the existing PacifiCorp permit areas has shown that the effects of subsidence on grazing and grazing lands are minimal.

All existing timber resources on the Mill Fork permit area are administered by the U.S.D.A. Forest Service. Experience on the existing PacifiCorp permit areas over the last 25 years has shown that subsidence does not affect timber resources or access to timber resources.

Experience on the existing PacifiCorp permit areas over the last 25 years has shown that the effects of subsidence on vegetation and wildlife resources are minimal (Rod Player, Bob Thompson, USFS, personal communication). As mentioned above, PacifiCorp conducts annual aerial surveys for monitoring subsidence. On 5 year intervals, infra-red photography technology is used. This photo documentation will be used as a monitoring tool to record any changes in vegetation. Monitoring will be conducted as stated until the Division approves a permit area reduction of the affected area.

Should significant subsidence impacts occur, the applicant will restore, to the extent technologically and economically feasible, those surface lands that were reduced in reasonably foreseeable use as a result of such subsidence to a condition capable of supporting presubsidence reasonably foreseeable uses.

R645-301-333. MINIMIZATION OF DISTURBANCES AND ADVERSE IMPACTS TO FISH AND WILDLIFE

In review of this mining permit application, the USFWS have identified that water consumption by underground coal mining operations could jeopardize the continued existence of or adversely modify the critical habitat of the Colorado River endangered fish species: Colorado pikeminnow, humpback chub, bonytailed chub, and razorback sucker. The USFWS has determined that water consumption by underground operations could potentially have adverse effects on the Colorado River basin. The USWFS considers consumption to include; evaporation from ventilation, coal preparation, sediment pond evaporation, subsidence on springs, alluvial aquifer abstractions into mines, postmining inflow to workings, coal moisture loss, and direct diversions. These consumption processes are discussed below.

Evaporation from ventilation - In mine water loss due to evaporation is a fairly easy calculation when the barometric pressure and vapor pressures are known. For example, on a 570,000 CFM mine fan, typical volumes of evaporation are approximately 18,000,000 gallons/year. However, this result is dependent on temperature and relative humidity. The evaporation evolves primarily from the inactive hydrologic systems mentioned above.

Coal Preparation - PacifiCorp owns water rights for use in their coal preparation plants.

Sediment pond evaporation - The sediment pond is used to hold rain and snow runoff that flows over disturbed areas of the coal mining and reclamation operations until accumulated

sediment has dropped out. At that point the water is discharged into a receiving stream. This would not be considered a consumption mechanism.

Subsidence effect on springs - In twenty-five years of mining, there have been no reported effects on springs due to subsidence. Refer to the Hydrology Section R645-301-728 and Appendix B, Section 11, Probable Hydrologic Consequences (reported by Mayo and Associates, 2001).

Alluvial abstractions into mines - There will be no water infiltrations from alluvial systems into the mine.

Postmining inflow into workings - There currently no proposed mine openings for the Mill Fork Lease. Currently, there is a planned postmining water discharge associated with the Deer Creek portals (refer to the Deer Creek reclamation plan).

Coal moisture loss - Typically the inherent moisture in coal mined at Deer Creek is approximately 5%. Run-of-mine moisture averages approximately 8.5 %. Deer Creek is scheduled to mine 4.2 million tons in 2002. Using these values the consumption is approximately 161 acre feet of water.

Direct diversion - no consumption.

Adding the two losses due to mining operations (Evaporation + Coal Moisture) equals 161 plus 55 acre feet of water consumed. The resultant is approximately 216 acre feet of water per year. If mine discharge is added to the equation, an enhancement to the hydrologic resource would be achieved. In 2001, the Deer Creek mine discharged nearly 2,670 acre feet into the Huntington Canyon drainage system. Theoretically, this would be a net gain of 2,453 (2,670-216) acre feet of water into the Colorado River Basin. Therefore, it is the opinion of PacifiCorp and Energy West

that water consumption by underground coal mining operation will not jeopardize the existence of or adversely modify the critical habitat of the Colorado River endangered fish species.

R645-301-340. RECLAMATION PLAN

All mining activities associated with the Mill Fork permit area will be through underground mining operations. Mine plan layouts (Hiawatha Seam) depicted in R645-301-500 Engineering Section, indicate potential portal breakouts located in Crandall Canyon, (Section 5, Township 16 South Range 7th East SLB&M), within a 2.41 acre right-of-way easement acquired from Andalex Resources/Intermountain Power Agency . The location of the portal breakouts are considered preliminary at this point and will be evaluated and designed based upon future surface coal exploration programs and mine plan considerations. Prior to any surface disturbance, Energy West will secure all necessary permits.